

Learning From Others: A Case Report from the Anesthesia Incident Reporting System

Case 2021-11: Ready or Not, Here We Come

I requested to provide recovery care to an 8-year-old patient coming to the phase 1 PACU in the university hospital's Ambulatory Procedure Center (APC). As a PALS-trained physician anesthesiologist with an interest in pediatric anesthesiology, I committed to watching the patient myself throughout phase I recovery, until she was ready to be transferred to Phase II, at which time I planned to make the lengthy transport with her to the children's hospital. The charge RN in APC would not allow me to use one of the APC Phase I rooms to do so.

Contributing factors:

1. The plan for postoperative care of pediatric patients in the university hospital is inadequate.
2. When we provide care to pediatric patients at the university hospital, there should be a fully stocked pediatric code cart in the immediate vicinity. There should be oxygen tanks and suction immediately available.
3. Pediatric patients should not be taken on a 12-minute walk during Phase I recovery.
4. A pediatric/PALS-trained RN should be teamed with a postop RN familiar with the recovery location to provide care to pediatric patients after anesthesia. This care should occur in the nearest recovery area to the procedure location.
5. This is a near-miss scenario. This particular patient was fortunate to be stable throughout her 12 minute transport to PACU.

While this case is specific to pediatric patients in adult facilities, which we will discuss at length below, the question it raises is certainly more broadly applicable: what are the contingencies, planning needs, and limitations that must be accounted for when caring for patients who fall outside a hospital or surgicenter's usual parameters of care? This case could just as easily have been an adult admitted to a children's hospital (something that many of us have seen and are seeing during the COVID epidemic that is overwhelming the capacity of adult hospitals and ICUs), an adult with congenital heart disease, a complex pediatric syndrome admitted to an adult hospital, or a host of other scenarios. If these cases are not emergent, sudden events, but rather non-routine yet expected, it is incumbent on the facility to be prepared with its physical plant, equipment, medical and nursing staff, and support services to meet those patient's needs and to provide an appropriate standard of care. This means advance planning by all stakeholders, and the anesthesiologist,

whose skills and responsibilities cross the boundaries of many departments and disciplines, is central to those plans.

In our case, a young school-aged child was anesthetized in an adult facility for an unspecified procedure and was expected to be transferred for phase 1 recovery directly from the OR to an adjacent children's hospital, a trip that was apparently quite a distance away through public corridors (a 12-minute trip could easily be a quarter mile). We can assume that the operation could not be performed in the pediatric facility, perhaps because of fixed equipment for the surgery that was only available in the APC. This is a common issue for radiation therapy, where even the largest children's medical centers often share a facility with their adult counterparts, but can occur with numerous other highly specialized procedures. We can also assume, based on the language of the reporter, that this was not the first pediatric patient who required treatment in this facility under anesthesia.

Two critical deficiencies in planning are apparent from the AIRS report and from the frustrated tone of the anesthesiologist who made it. First, the APC, or at least its PACU, lacked adequate pediatric equipment. Second, the APC staff were both insufficiently trained to care for children and were unwilling to make accommodations to provide that care. Their perceived solution was to ignore the problem and transfer the patient elsewhere, where the proper facilities and skills resided, but they failed to consider that such a process entailed risks of its own. Both problems also point to a lack of insight and planning at the system level that resulted in a potentially adverse event reaching the patient. Fortunately, no harm ensued, but the event was surely a signal that better planning is needed to avert the possibility of a less favorable outcome the next time.

The reporter's primary focus on permitting phase 1 recovery to take place in the APC was to eliminate the risk of a long transport of an emerging patient along a route through areas of the hospital where assistance and privacy were absent. Are these risks real? A study from 1995 of intrahospital transport of pediatric ICU patients detected a surprisingly high incidence of critical events, with physiologic deterioration occurring in nearly three quarters and an equipment-related event in one-tenth of 180 transports. A more recent study in emergency department patients found a similar incidence. A meta-analysis of studies by Haydar et al. of complications during pediatric intrahospital transport confirmed that the risk is not



negligible and recommended numerous strategies to mitigate risk, but few would argue that the risk is best reduced by eliminating that transport altogether, if possible. In addition to the risk of adverse respiratory and hemodynamic events, the lack of help en route coupled with the length and nature of the route itself were wisely cited by the reporter as particular hazards.

Pediatric patients emerging from anesthesia are particularly vulnerable to adverse airway events. Airway activation, laryngospasm, obstruction, and oxygen desaturation all are events that are more common in children during the emergence from anesthesia and are familiar to those caring for children in the PACU. Emergence delirium or agitation is also more common in children and can lead to both self-harm and harm to caretakers. One would not like to contemplate the scenario were such an even to occur during transport through a public area of the hospital!

The American Academy of Pediatrics Section on Anesthesiology and Pain Medicine understands that not all children's care takes place in pediatric centers and identified shortcomings in adult-oriented medical facilities that can be remediated. The Section and the Academy published guidelines and practice advisories in 1999, updated in 2015, that delineate the critical issues that must be addressed. The key overall recommendation is that the skill of the anesthesiologist is easily subsumed by other factors if the supporting systems are deficient, something that is well illustrated in our case. Adult or general facilities that care for children, particularly on a less-than-regular basis, should have a standing work group – perhaps best led by an anesthesiologist with an interest and modicum of expertise in pediatric anesthesiology – to set up plans, equipment, and facilities to care for these patients and identify key personnel in nursing and other specialties who can be part of the clinical team when such patients present to the institution. A similar strategy can be adopted for any “unusual” patient categories that present infrequently, but with some regularity, to your center.

What are some solutions to this problematic situation? Some ideas – and critical safety measures – are enumerated in the cited AAP papers. Having a pediatric cart that contains the necessary supplies to care for different ages of children is a low-cost and high-yield strategy to have critical material immediately available in the adult PACU. If the major impediment to keeping children in the adult phase 1 setting is nursing expertise, the anesthesiologist can stay in attendance until ready to transfer to phase 2 as suggested by the reporter; cross staffing from the children's hospital is sometimes a possibility and is often implemented in radiation treatment facilities. While not a cost-effective or efficient solution, the patient could be recovered in the OR until sufficiently stable for transport to phase 2. In some unusual situations, where the level of postoperative care needs to be escalated to a higher standard than available at the adult center, it might even be safer to transport the patient anesthetized and monitored and allow them to emerge in phase 1 of the children's hospital PACU rather than risk an unstable emergence en route. But, ultimately, the well-being of the patient must come first, starting with the proactive implementation of a standardized care plan that prioritizes patient safety. ■

Bibliography:

1. Hackel A, Badgwell JM, Binding RR, et al. Section on Anesthesiology; American Academy of Pediatrics. Guidelines for the pediatric perioperative anesthesia environment. *Pediatrics* 1999;103(2):512-5. <https://doi.org/10.1542/peds.103.2.512>
2. Polaner DM, Houck CS, et al. AAP Section on Anesthesiology and Pain Medicine. Critical Elements for the Pediatric Perioperative Anesthesia Environment. *Pediatrics* 2015;148:1200-5. <https://doi.org/10.1542/peds.2015-3595>
3. Wallen E, Venkataraman ST, Grosso MJ, Kiene K, Orr RA. Intrahospital transport of critically ill pediatric patients. *Crit Care Med* 1995;23(9):1588-95. <https://doi.org/10.1097/00003246-199509000-00020>
4. Papson JP, Russell KL, Taylor DM. Unexpected events during the intrahospital transport of critically ill patients. *Acad Emerg Med* 2007;14(6):574-7. <https://doi.org/10.1197/j.aem.2007.02.034>
5. Haydar B, Baetzel A, Elliott A, MacEachern M, Kamal A, Christensen R. Adverse Events During Intrahospital Transport of Critically Ill Children: A Systematic Review. *Anesth Analg* 2020;131:1135-45 <https://doi.org/10.1213/ane.0000000000004585>